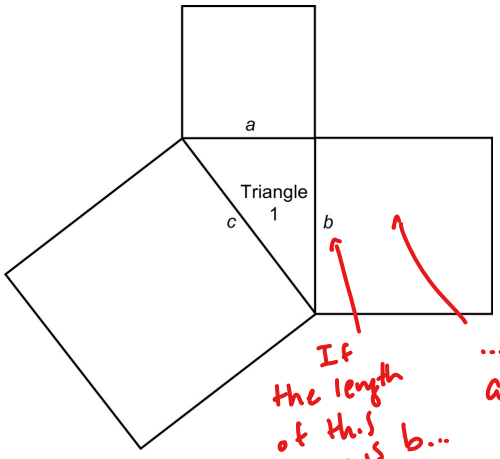
Date: KEY

3.4 Notes: Using the Pythagorean Theorem

Review:



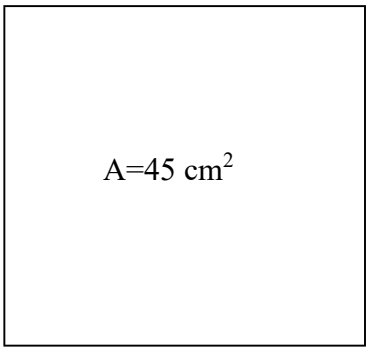
Explain how the diagram is related to the addition statement: $a^2 + b^2 = c^2$

The area of the smallest square + The area of the medium square = The area of the biggest square

$a^2 + b^2 = c^2$

If the length of this line is b...

... then the area of this square is $b \times b = b^2$



How do you find the length of one side for the square at left?

Take the square root of the area.

$s = \sqrt{A}$

$= \sqrt{45 cm^2}$

$s = 6.7 cm$

How would you find the length of the missing hypotenuse for the right triangle?

Use the Pythagorean Relationship:

$a^2 + b^2 = c^2$

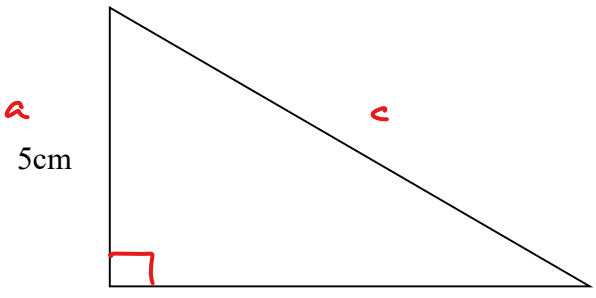
$(5)^2 + (10)^2 = c^2$

$25 + 100 = c^2$

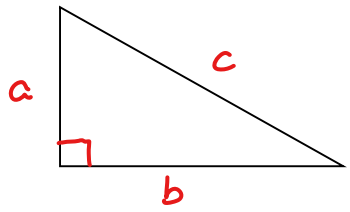
$\sqrt{125} = \sqrt{c^2}$

$11.18... = c$

$11.2 cm = c$

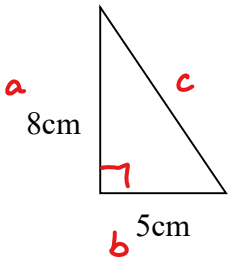


The Pythagorean Theorem



$$a^2 + b^2 = c^2$$

Find the missing sides for each of the triangles below:



$a^2 + b^2 = c^2$

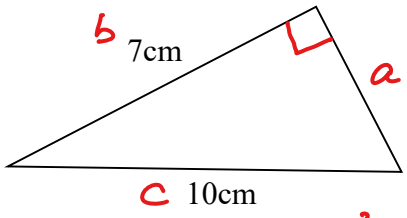
$(8)^2 + (5)^2 = c^2$

$64 + 25 = c^2$

$\sqrt{89} = \sqrt{c^2}$

$9.43... = c$

$9.4\text{cm} = c$



$a^2 + b^2 = c^2$

$a^2 + (7)^2 = (10)^2$

$a^2 + 49 = 100$

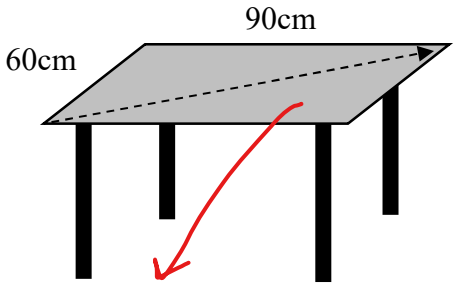
$-49 \quad -49$

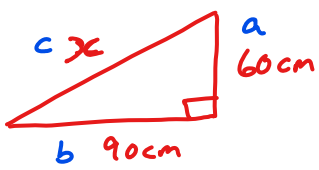
$\sqrt{a^2} = \sqrt{51}$

$a = 7.14...$

$a = 7.1\text{ cm}$

Jürgen is cooking meatballs in his kitchen. One of the meatballs rolls from one corner of the table, diagonally to the other corner. How far does it roll?





FIND x

$a^2 + b^2 = c^2$

$(60)^2 + (90)^2 = x^2$

$3600 + 8100 = x^2$

$\sqrt{11\,700} = \sqrt{x^2}$

$108.16... = x$

$108.2\text{cm} = x$